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EXAMINER

HWU, JUNE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/764,978	Applicant(s) DENCHEV ET AL.	
	Examiner JUNE HWU	Art Unit 1661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 February 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5,6,13,14,16-22,43,50 and 52-63 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,5,6,13,14,16-22,43,50 and 52-63 is/are rejected.
- 7) ☐ Claim(s) 1, 5,18,20,21,43,50 and 55 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

In view of the appeal brief filed on February 16, 2010, PROSECUTION IS HEREBY REOPENED. New grounds of rejection set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

/Anne Marie Grunberg/

Supervisory Patent Examiner, Art Unit 1661

Status of the Claims

Claims 2-4, 7-12, 15, 23-42, 44-49, and 51 are cancelled and claims 1, 5-6, 13, 14, 16-22, 43, 50, 52-63 will be examined on the merits.

The rejection under 35 U.S.C. 103(a) as being unpatentable over Handley et al (U.S. Patent No. 5,491,090) in view of Schuller et al (Plant Cell, Tissue and Organ Culture 60: 23-31,

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2000) and further in view of Find (U.S. Patent No. 6,897,065 B1) is withdrawn due to applicants' arguments.

The rejection under 35 U.S.C. 103(a) as being unpatentable over Handley et al (U.S. Patent No. 5,491,090) in view of Fan et al (U.S. Patent No. 6,689,609) is withdrawn due to applicants' arguments.

The rejection under 35 U.S.C. 103(a) as being unpatentable over Handley et al in view of Pullman et al (U.S. Patent No. 6,492,174) is withdrawn due to applicants' arguments.

Objections to the Claims

Claims 1, 5, 18, 20, 21, 43, 50 and 55 are objected to because of the following informalities:

Claim 5 is missing the article -- the -- before "lactose".

Claims 18, 20 and 21 are missing the article -- the -- after "wherein"

Claims 1, 43, 50 and 55 recite plurality of steps. MPEP 608.01 (m) states that "Where a claim sets a plurality of elements or steps, each element or step of the claim should be separated by a line indentation, 37 CFR 1.75(i)". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 18, 52 and 58 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which

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was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Neither the instant specification nor the originally filed claims appear to provide support for the phrase "more than 1%" in claim 18. The specification states, "1% lactose and 0.5% sucrose" at p. 14 with regard to loblolly pine and "1.5% Lactose" in Table 2 with regard to loblolly pine.

Thus, such a phrase constitutes NEW MATTER. In response to this rejection, Applicants are required to point to support for the phrase or cancel the new matter.

Neither the instant specification nor the originally filed claims appear to provide support for the phrase "1% or more" in claim 52. The specification states, "1% lactose and 0.5% sucrose" at p. 14 with regard to loblolly pine and "1.5% Lactose" in Table 2 with regard to loblolly pine.

Thus, such a phrase constitutes NEW MATTER. In response to this rejection, Applicants are required to point to support for the phrase or cancel the new matter.

Neither the instant specification nor the originally filed claims appear to provide support for the phrase "1% or more" in claim 58. The specification states, "1.5% galactose and 0.5% sucrose" at p. 17 with regard to Radiata pine and "less than about 6%" at p. 7 with regard to galactose-containing compound.

Thus, such a phrase constitutes NEW MATTER. In response to this rejection, Applicants are required to point to support for the phrase or cancel the new matter.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 5, 6, 13, 14, 16-22, 43, 50, and 52-63 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Dependent claims are included in all rejections.

Claim 1 recites the limitation "the nutrient medium" in line 4. The claim is unclear because it is uncertain what type of nutrient medium is being described. Is the nutrient medium any of induction medium, maintenance medium, or prematuration medium or was the nutrient medium used to derive the immature embryogenic culture? As the claim is currently written, none of the media carry patentable weight since they are simply recited as being the source from which the embryogenic culture is derived. However, it would appear that applicant intends for the media to carry patentable weight since an effort is made to further characterize them based on various sugars, this in spite of the fact that this is a method claim. As the claim is currently written, it is unclear if the nutrient medium is supposed to be a limitation in the present claim. If so, the claim would need to be rewritten to clarify this point. Does this nutrient medium contain lactose and an additional sugar? Or are lactose and an additional sugar drawn to a separate induction, maintenance or prematuration medium? Does this nutrient medium consist of induction or maintenance or prematuration media; or does this nutrient medium consist of induction or maintenance or prematuration media comprising lactose and additional sugar? Moreover, the citations with regard to description of induction, maintenance and prematuration media have no weight because they do not provide any limitation to the method of reproducing

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coniferous somatic embryos by somatic embryogenesis. In effect, the only limitation in claim 1 that limits the method of reproducing somatic embryos is the step of growing *Pinus taeda* somatic embryos or hybrids thereof on a medium.

Claim 1 recites the limitation "the maturation medium" in line 10. The claim is unclear because it is uncertain if the maturation medium contains a nutrient medium derived from an explant or if the maturation medium contains lactose and an additional sugar.

In claim 5, it is unclear what is directed to the percentages listed as there are no quantifying units. Is it percent by weight or volume? Clarification is needed.

Claim 5 recites the limitation "the nutrient medium" in lines 1-2. The claim is unclear because it is uncertain what type of nutrient medium is being described. It is unclear which nutrient medium is being described. Is it the nutrient medium containing the immature embryogenic culture derived from an explant; is it the nutrient medium with the lactose and additional sugar; is it the nutrient medium consisting of induction or maintenance or prematuration media; or is it the nutrient medium consisting of induction or maintenance or prematuration media comprising lactose and additional sugar? It is unclear how the method claimed in claim 5 further limits the method of claim 1. Although, claim 5 does not appear to further limit claim 1, for prior art purposes, claim 5 is interpreted as a method of reproducing *Pinus taeda* somatic embryos or hybrids thereof by somatic embryogenesis comprising a nutrient medium containing less than 6.0% lactose.

Claim 6 recites the limitation "the nutrient medium" in line 1. The claim is unclear because it is uncertain what type of nutrient medium is being described. It is unclear which nutrient medium is being described. Is it the nutrient medium containing the immature embryogenic culture derived from an explant; is it the nutrient medium with the lactose and additional sugar; is it the nutrient medium consisting of induction or maintenance or

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prematuration media; or is it the nutrient medium consisting of induction or maintenance or prematuration media comprising of lactose and additional sugar? Furthermore, it is unclear how the method of claim 6 further limits the method of claim 1. Although, claim 6 does not appear to further limit claim 1, for prior art purposes, claim 6 is interpreted as a method of reproducing *Pinus taeda* somatic embryos or hybrids thereof by somatic embryogenesis comprising a nutrient medium that is gelled or liquid.

Claims 13 and 14 recite the limitation "the prematuration medium" in line 1. It is unclear if the "prematuration medium" is from the nutrient medium derived from an explant or the nutrient medium comprise of lactose and additional sugar. It is also unclear how much auxin or cytokinin the maintenance medium has. As a result, it is not clear how much the prematuration medium contains. What if there is no auxin or cytokinin in the maintenance medium? How can the prematuration medium contain less? It is further unclear how the method of claims 13 and 14 further limit the method of claim 1. Since, claims 13 and 14 do not further limit claim 1, for prior art purposes, claims 13 and 14 are interpreted as a method of reproducing *Pinus taeda* somatic embryos by somatic embryogenesis comprising prematuration medium containing less auxin and less cytokinin than the maintenance medium specifically in claim 13 and a method of reproducing *Pinus taeda* somatic embryos or hybrids thereof by somatic embryogenesis comprising prematuration medium further comprising abscisic acid (ABA) specifically in claim 14.

Claims 16 and 17 recite the limitation "the additional sugars" in line 1. There is insufficient antecedent basis for this limitation in the claim because claim 1 recites "additional sugar" (singular).

In claim 18, it is unclear what is directed to the percentages listed as there are no quantifying units. Is it percent by weight or volume? Clarification is needed.

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Claim 18 recites "more than 1.0%" which is indefinite because the specification at page 7 discloses suitable concentration as "may be less than about 6%" and Table 3 discloses "6%" lactose. Hence, the metes and bounds of the claim are unclear.

Claim 18 recites the limitation "the nutrient medium" in lines 1-2. The claim is unclear because it is uncertain what type of nutrient medium is being described. It is unclear which nutrient medium is being described. Is it the nutrient medium containing the immature embryogenic culture derived from an explant; is it the nutrient medium with the lactose and additional sugar; is it the nutrient medium containing lactose and additional sugar; or is it the nutrient medium consisting of induction or maintenance or prematuration media comprising of lactose and additional sugar? It is further unclear how the method steps of the claims further limit the method of claim 1. Since, claim 18 does not further limit claim 1, for prior art purposes claim 18 is interpreted as a method of reproducing *Pinus taeda* somatic embryos or hybrids thereof by somatic embryogenesis comprising a nutrient medium containing 1.0% or more lactose.

Claim 19 recites the limitation "the embryogenic culture" in line 1. There is insufficient antecedent basis for this limitation in the claim. It is further unclear how containing early stage embryos further limits the method of claim 1.

In claim 20, it is unclear what is directed to the percentages listed as there are no quantifying units. Is it percent by weight or volume? Clarification is needed.

Claims 20 recites the limitation "the nutrient medium" in lines 1-2. The claim is unclear because it is uncertain what type of nutrient medium is being described. It is unclear which nutrient medium is being described. Is it the nutrient medium containing the immature

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embryogenic culture derived from an explant; is it the nutrient medium with the lactose and additional sugar; is it the nutrient medium containing lactose and additional sugar; or is it the nutrient medium consisting of induction or maintenance or prematuration media comprising of lactose and additional sugar? It is further unclear how the method steps of the claims further limit the method of claim 1. Since, claim 20 does not further limit claim 1, for prior art purposes, claim 20 is interpreted as a method of reproducing *Pinus taeda* somatic embryos or hybrids thereof by somatic embryogenesis comprising a nutrient medium wherein lactose is less than 2.0%.

In claim 21, it is unclear what is directed to the percentages listed as there are no quantifying units. Is it percent by weight or volume? Clarification is needed.

Claim 21 recites the limitation "the nutrient medium" in lines 1-2. The claim is unclear because it is uncertain what type of nutrient medium is being described. It is unclear which nutrient medium is being described. Is it the nutrient medium containing the immature embryogenic culture derived from an explant; is it the nutrient medium with the lactose and additional sugar; is it the nutrient medium containing lactose and additional sugar; or is it the nutrient medium consisting of induction or maintenance or prematuration media comprising of lactose and additional sugar? It is further unclear how the method steps of the claims further limit the method of claim 1. Since, claim 21 does not further limit claim 1, for prior art purposes, claim 21 is interpreted as a method of reproducing *Pinus taeda* somatic embryos or hybrids thereof by somatic embryogenesis comprising a nutrient medium containing between 1.0% and 6.0% lactose.

Claims 22 recites the limitation "the nutrient medium" in lines 1-2. The claim is unclear because it is uncertain what type of nutrient medium is being described. It is unclear which nutrient medium is being described. Is it the nutrient medium containing the immature

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embryogenic culture derived from an explant; is it the nutrient medium with the lactose and additional sugar; is it the nutrient medium containing lactose and additional sugar; or is it the nutrient medium consisting of induction or maintenance or prematuration media comprising of lactose and additional sugar? It is further unclear how the method steps of the claims further limit the method of claim 1. Since, claim 22 does not further limit claim 1, for prior art purposes, claim 22 is interpreted as a method of reproducing *Pinus taeda* somatic embryos by somatic embryogenesis comprising a nutrient medium containing auxin and cytokinin.

Claim 43 recites the limitation "the embryogenic culture" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 50 recites the limitation "the nutrient medium" in line 4. The claim is unclear because it is uncertain what type of nutrient medium is being described. Is the nutrient medium any of induction medium, maintenance medium, or prematuration medium or was the nutrient medium used to derive the immature embryogenic culture? As the claim is currently written, none of the media carry patentable weight since they are simply recited as being the source from which the embryogenic culture is derived. However, it would appear that applicants intend for the media to carry patentable weight since an effort is made to further characterize them based on the sugar, this is in spite of the fact that this is a method claim. As the claim is currently written, it is unclear if the nutrient medium is supposed to be a limitation in the present claim. If so, the claim would need to be rewritten to clarify this point. Does this nutrient medium contain lactose and an additional sugar? Or are lactose and an additional sugar drawn to a separate induction, maintenance or prematuration medium? Does this nutrient medium consist of induction or maintenance or prematuration media; or does this nutrient medium consist of induction or maintenance or prematuration media comprising lactose and additional sugar? Moreover, the citations with regard to description of induction, maintenance and prematuration

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media have no weight because they do not provide any limitation to the method of reproducing coniferous somatic embryos by somatic embryogenesis. In effect, the only limitation in claim 50 that limits the method of reproducing somatic embryos is the step of growing *Pinus taeda* somatic embryos or hybrids thereof on a medium.

Claim 50 recites the limitation "the maturation medium" in line 10. The claim is unclear because it is uncertain if the maturation medium contains a nutrient medium derived from an explant or if the maturation medium contains lactose and an additional sugar.

In claim 52, it is unclear what is directed to the percentages listed as there are no quantifying units. Is it percent by weight or volume? Clarification is needed.

Claim 52 recites "1.0% or more" is indefinite because the specification states, "1% lactose and 0.5% sucrose" at p. 14 with regard to loblolly pine and "1.5% Lactose" in Table 2 with regard to loblolly pine. There is no mention of lactose concentration containing 6% or more. Hence, the metes and bounds of the claim are unclear.

Claim 52 recites the limitation "the nutrient medium" in line 2. It is unclear which nutrient medium is being described. Is it the nutrient medium containing the immature embryogenic culture derived from an explant; is it the nutrient medium with the lactose and additional sugar; is it the nutrient medium consisting of induction or maintenance or prematuration media; or is it the nutrient medium consisting of induction or maintenance or prematuration media comprising of lactose and additional sugar? It is unclear how the method claimed in claim 52 further limits the method of claim 50. Since, claim 52 does not further limit claim 50, for prior art purposes, claim 52 is interpreted as a method of reproducing *Pinus taeda* somatic embryos or hybrids thereof by somatic embryogenesis comprising a nutrient medium containing 1.0% or more lactose.

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Claim 53 recites the limitation "the nutrient medium" in line 2. It is unclear which nutrient medium is being described. Is it the nutrient medium containing the immature embryogenic culture derived from an explant; is it the nutrient medium with the lactose and additional sugar; is it the nutrient medium consisting of induction or maintenance or prematuration media; or is it the nutrient medium consisting of induction or maintenance or prematuration media comprising of lactose and additional sugar? It is unclear how the method claimed in claim 53 further limits the method of claim 50. Since, claim 53 does not further limit claim 50, for prior art purposes, claim 53 is interpreted as a method of reproducing *Pinus taeda* somatic embryos or hybrids thereof by somatic embryogenesis comprising a nutrient medium containing between 1.0% and 6.0% lactose.

In claim 53, it is unclear what is directed to the percentages listed as there are no quantifying units. Is it percent by weight or volume? Clarification is needed.

In claim 54, it is unclear what is directed to the percentages listed as there are no quantifying units. Is it percent by weight or volume? Clarification is needed.

Claim 54 recites the limitation "the nutrient medium" in line 2. It is unclear which nutrient medium is being described. Is it the nutrient medium containing the immature embryogenic culture derived from an explant; is it the nutrient medium with the lactose and additional sugar; is it the nutrient medium consisting of induction or maintenance or prematuration media; or is it the nutrient medium consisting of induction or maintenance or prematuration media comprising of lactose and additional sugar? It is unclear how the method claimed in claim 54 further limits the method of claim 50. Since, claim 54 does not further limit claim 50, for prior art purposes, claim 54 is interpreted as a method of reproducing *Pinus taeda* somatic embryos by somatic embryogenesis comprising a nutrient medium containing less than 6.0% lactose.

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Claim 55 recites the limitation "the nutrient medium" in line 4. The claim is unclear because it is uncertain what type of nutrient medium is being described. Is the nutrient medium any of induction medium, maintenance medium, or prematuration medium or was the nutrient medium used to derive the immature embryogenic culture? As the claim is currently written, none of the media carry patentable weight since they are simply recited as being the source from which the embryogenic culture is derived. However, it would appear that applicants intend for the media to carry patentable weight since an effort is made to further characterize them based on various sugars, this is in spite of the fact that this is a method claim. As the claim is currently written, it is unclear if the nutrient medium is supposed to be a limitation in the present claim. If so, the claim would need to be rewritten to clarify this point. Does this nutrient medium contain galactose containing sugar and an additional sugar? Or is galactose containing sugar and an additional sugar drawn to a separate induction, maintenance or prematuration medium? Does this nutrient medium consist of induction or maintenance or prematuration media; or does this nutrient medium consist of induction or maintenance or prematuration media comprising galactose containing sugar and additional sugar? Moreover, the citations with regard to description of induction, maintenance and prematuration media have no weight because they do not provide any limitation to the method of reproducing coniferous somatic embryos by somatic embryogenesis. In effect, the only limitation in claim 55 that limits the method of reproducing somatic embryos is the step of growing *Pinus taeda* or hybrids thereof, *Pinus radiata* or hybrids thereof, and *Pseudotsuga menziesii* or hybrids thereof somatic embryos on a medium.

Claim 55 recites the limitation "the maturation medium" in line 10. The claim is unclear because it is uncertain if the maturation medium contains a nutrient medium derived from an explant or if the maturation medium contains lactose and an additional sugar.

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In claim 58, it is unclear what is directed to the percentage listed as there are no quantifying units. Is it percent by weight or volume? Clarification is needed.

Claim 58 recites "1.0% or more" is indefinite because the specification states, "1.5% galactose and 0.5% sucrose" at p. 17 with regard to *Radiata* pine and "less than about 6%" at p. 7 with regard to galactose-containing compound. There is no mention of galactose-containing sugar concentration of more than 6%. Hence, the metes and bounds of the claim are unclear. Handle as discussed above. Same with the rest below.

Claim 58 recites the limitation "the nutrient medium" in line 2. It is unclear which nutrient medium is being described. Is it the nutrient medium containing the immature embryogenic culture derived from an explant; is it the nutrient medium with the galactose-containing sugar and additional sugar; is it the nutrient medium consisting of induction or maintenance or prematuration media; or is it the nutrient medium consisting of induction or maintenance or prematuration media comprising of galactose-containing sugar and additional sugar? It is unclear how the method claim of 58 further limits the method of claim 55. Since, claim 58 does not further limit claim 55, for prior art purposes, it appears that applicants desire to change the claim will not be given patentable weight. Thus, for prior art purposes, claim 58 is interpreted as a method of reproducing *Pinus taeda* or hybrids thereof, *Pinus radiata* or hybrids thereof and *Pseudotsuga menziesii* or hybrids thereof somatic embryos by somatic embryogenesis comprising a nutrient medium containing 1.0% or more galactose-containing sugar.

In claim 59, it is unclear what is directed to the percentages listed as there are no quantifying units. Is it percent by weight or volume? Clarification is needed.

Claim 59 recites the limitation "the nutrient medium" in line 2. It is unclear which nutrient medium is being described. Is it the nutrient medium containing the immature embryogenic culture derived from an explant; is it the nutrient medium with the galactose-containing sugar

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and additional sugar; is it the nutrient medium consisting of induction or maintenance or prematuration media; or is it the nutrient medium consisting of induction or maintenance or prematuration media comprising of galactose-containing sugar and additional sugar? It is unclear how the method claim of 59 further limits the method of claim 55. Since, claim 59 does not further limit claim 55, for prior art purposes, it appears that applicants desire to change the claim will not be given patentable weight. Thus, for prior art purposes claim 59 is interpreted as a method of reproducing *Pinus taeda* *Pinus radiata* or hybrids thereof and *Pseudotsuga menziesii* or hybrids thereof somatic embryos by somatic embryogenesis comprising a nutrient medium containing between 1.0% and 6.0% galactose-containing sugar.

In claim 60, it is unclear what is directed to the percentages listed as there are no quantifying units. Is it percent by weight or volume? Clarification is needed.

Claim 60 recites the limitation "the nutrient medium" in line 2. It is unclear which nutrient medium is being described. Is it the nutrient medium containing the immature embryogenic culture derived from an explant; is it the nutrient medium with the galactose-containing sugar and additional sugar; is it the nutrient medium consisting of induction or maintenance or prematuration media; or is it the nutrient medium consisting of induction or maintenance or prematuration media comprising of galactose-containing sugar and additional sugar? It is unclear how the method claim of 60 further limits the method of claim 55. Thus, for prior art purposes claim 60 is interpreted as a method of reproducing *Pinus taeda* *Pinus radiata* or hybrids thereof and *Pseudotsuga menziesii* or hybrids thereof somatic embryos by somatic embryogenesis comprising a nutrient medium containing less than 6.0% galactose-containing sugar.

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Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 6, 13-14, 17, 19, 22, 50, 55 and 56 are rejected under 35 U.S.C. 102(b) as being anticipated by Handley et al (U.S. Patent No. 5,491,090).

The claims are broadly drawn to a method of reproducing *Pinus taeda* and *P. radiata* somatic embryos by growing immature embryogenic culture derived from an explant on a nutrient medium. Since the claims are unclear to the type of nutrient medium for reproducing *Pinus taeda* and *P. radiata* somatic embryos, then the claim as currently written only carries patentable weight for the above limitations because the claims recite the source from which the embryogenic culture is derived. It does not matter how the embryo was derived unless the source somehow changed the embryo such that it is different depending on the source. The cited media and steps pertaining to the media carry no patentable weight with regard to reproducing coniferous somatic embryos; however, if Applicants intends the medium and steps to have patentable weight then the claims need to be rewritten accordingly. Moreover, the citations with regard to descriptions of induction, maintenance and prematuration media have no patentable weight because the word "used" describes an intended use and provides no patentable weight to the method of reproducing coniferous somatic embryos by somatic embryogenesis of *Pinus taeda* and *Pinus radiata*. In addition, the phrase "wherein the maturation medium" does not further limit the claims and has no patentable weight as discussed above. As a result, the claims are limited to a method of reproducing *Pinus taeda* and *Pinus radiata* somatic embryos by somatic embryogenesis on a nutrient medium. The claims are further limited to the gelled or liquid nutrient medium; additional sugars are selected from the group consisting of sucrose, glucose and fructose; culture containing early stage embryos; and nutrient medium comprising an auxin or a cytokinin. The nutrient medium contains auxin and

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cytokinin in the semi-solid initiation/maintenance medium and liquid maintenance medium (Table II). The prematuration medium contains less auxin and less cytokinin than the maintenance medium and further comprises abscisic acid (ABA)

Handley et al disclose a method of regenerating *Pinus taeda* and *P. radiata* (col. 10) in liquid medium, wherein the immature zygotic embryo is cultured on a nutrient medium (Example 1). The concentration of sugar selected from the group consisting of glucose, maltose, sucrose, melezitose and combination thereof is 5.0 to 100.0 g/l (col. 5, lines 62-64). The gelling agent is 2.5 to 4.5 g/l agar, 0.5 to 1.5 g/l gellan, 3.0 to 5.0 g/l agarose or 0.5 to 1.5 gellan gum (col. 5, lines 64-66). The embryogenic culture contains early stage zygotic embryos in the initial culture medium (col. 15, lines 11-14 and lines 33-34). The embryo development stage would be considered the prematuration stage because it is after the maintenance step and before the maturation step (col. 7-9). The embryo development (prematuration) does not contain any auxin or cytokinin which is less than the amount in the maintenance medium but does contain ABA (Table II and col. 8, lines 35-39).

Claims 1, 6, 16-17, 19, 22, 50, and 55-63 are rejected under 35 U.S.C. 102(b) as being anticipated by Pullman et al (U.S. Patent No. 6,492,174).

The claims are broadly drawn to a method of reproducing *Pinus taeda*, *P. radiata*, and *Pseudotsuga menziesii* somatic embryos by growing immature embryogenic culture derived from an explant on a nutrient medium. The claims construction of claims 1, 6, 17, 19, 22, 50, 55 and 56 are discussed above. The claims drawn to gelled or liquid nutrient medium further comprising an auxin and a cytokinin. The nutrient medium is a galactose-containing sugar at concentration of 1% or more to less than 6% and the sugar is galactose. The additional sugars

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are readily metabolized and are selected from the group consisting of sucrose, glucose and fructose. The embryogenic culture contains early stage embryos.

Pullman et al disclose a method of reproducing *Pinus taeda* (Example 3), *P. radiata* (col. 7, lines 40-44), and *Pseudotsuga menziesii* (Example 2) by somatic embryogenesis, wherein the early to midstage zygotic embryo (col. 18, lines 1-2) is cultured on a nutrient medium containing a metabolized carbohydrate energy source, such as, maltose, glucose, fructose, sucrose or galactose or combinations thereof at a concentration between 5 and 70 g/l (col. 9, lines 54-60). The nutrient medium further comprises a solid (gelled) or liquid medium wherein the carbohydrate concentration selected from maltose, glucose, fructose, sucrose or galactose or combinations thereof (col. 9, lines 54-56) is about 15,000 mg/l (Table 1). Galactose may be the galactose-containing sugar. The nutrient medium further comprises of an auxin and cytokinin (Table 1). The explants in the Douglas fir initiation liquid medium contains early-mid stage zygotic embryo (col. 18, lines 1-2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 6, 13-14, 16, 17, 19, 22, 50 and 55-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pullman et al (U.S. Patent No. 6,492,174) in view of Handley et al (U.S. Patent No. 5,491,090) and in light of Find (U.S. Patent No. 6,897,065).

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The claims are broadly drawn to a method of reproducing *Pinus taeda*, *P. radiata*, and *Pseudotsuga menziesii* somatic embryos by growing immature embryogenic culture derived from an explant on a nutrient medium. The claims construction of claims 1, 6, 16-17, 19, 22, 50, and 55-63 are discussed above.

The teachings of Pullman et al are discussed above.

Pullman et al do not teach that the prematuration medium contains less auxin and less cytokinin than the maintenance medium. Pullman et al further do not teach that the prematuration medium contains abscisic acid (ABA).

Handley et al teach a method of regenerating coniferous plants such as *Pinus* and hybrids thereof (abstract and col. 5, lines 24-26). The embryo development stage would be considered the prematuration stage because it is after the maintenance step and before the maturation step (col. 7-9). The embryo development (prematuration) does not contain any auxin or cytokinin which is less than the amount in the maintenance medium but does contain ABA (Table II and col. 8, lines 35-39).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the method of embryogenic culture of *Pinus taeda*, *P. radiata*, and *Pseudotsuga menziesii* zygotic embryos as taught by Pullman, wherein the prematuration medium contains ABA and less auxin and less cytokinin than the maintenance medium as taught by Handley because ABA is a growth regulator which would aid in the growth of the embryogenic tissue. (col. 8, lines 38-39). One of ordinary skill in the art would have been motivated to do so given that ABA is known in the art to promote maturation (Find col. 5, lines 25-35). Pullman further taught that ABA is used to improve the induction of embryogenic cultures (col. 10 bridging to col. 11). Moreover, Pullman taught that auxins and cytokinins may be added to the nutrient medium depending on the species and type of media used (col. 9, lines

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4-5). Furthermore Pullman taught that the amount of plant hormones also depends on the presence or absence of an adsorbent material because adsorbent materials adsorb large proportions of auxins and cytokinin (col. 9, lines 25-35). Furthermore, one of ordinary skill in the art would have a reasonable expectation of success in the combination of Pullman in view of Handley and in light of Find because Pullman teaches a method of reproducing coniferous somatic embryogenesis in a nutrient medium, wherein the auxin and cytokinin may or may not be added depending on the species and type of medium being utilized. Handley taught that the embryo development (prematuration) medium does not contain any auxin or cytokinin when compared to the maintenance medium but does contain ABA. Handley further taught that ABA is beneficial in the semi-solid development medium (prematuration) to stimulate development of the embryos (col. 11, lines 22-28). The addition of hormones and would have been a choice of experimental design and is considered within the purview of the cited prior art.

From the teachings of the references, it is apparent that one of ordinary skill in the art would have had reasonable expectation of success in producing the claimed invention. Thus, the invention, as a whole, would be clearly *prima facie* obvious to one of ordinary skill in the art at the time the invention was made as evidenced by the cited references.

Claims 1, 5-6, 16-19, 20-21, 50, 52-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pullman et al (U.S. Patent No. 6,492,174) in view of Schuller et al (Plant Cell Reports (1993) 12: 199-202).

The claims are broadly drawn to a method of reproducing *Pinus taeda*, *P. radiata*, and *Pseudotsuga menziesii* somatic embryos by growing immature embryogenic culture derived from an explant on a nutrient medium. The claims construction of claims 1, 6, 16-17, 19, 22 50 and 55-63 are discussed above. The only limitation in the claims is the method of reproducing

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somatic embryo on medium containing concentration of lactose specifically claims 5, 18, 20-21 and 52-54. Moreover, the citations with regard to descriptions of induction, maintenance and prematuration media have no weight because they do not provide any limitation to the method of reproducing coniferous somatic embryos by somatic embryogenesis.

The teachings of Pullman et al are discussed above.

Pullman et al do not teach the use of lactose in the nutrient medium.

Schuller et al teach the use of lactose in the nutrient medium at a concentration of 100mM (p. 199, col. 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the method of embryogenic culture of *Pinus taeda* zygotic embryos as taught by Pullman, wherein the nutrient medium contains lactose as taught by Schuller because Schuller taught that lactose was superior as a carbohydrate source (abstract). One of ordinary skill in the art would have been motivated to use lactose in the nutrient medium because Schuller taught that somatic embryos differentiated with lactose in the nutrient medium (p. 202, col. 1). Furthermore, one of ordinary skill in the art would have a reasonable expectation of success in the combination of Pullman in view of Schuller because lactose is another type of sugar that could be substituted for the carbohydrate. Schuller further taught that lactose was a superior to other carbohydrates (abstract). The use of lactose would have been a choice of experimental design and is considered within the purview of the cited prior art.

Although Schuller does not specifically teach *Pinus taeda*, *P. radiata*, and *Pseudotsuga menziesii*, Pullman teach that their method of initiating embryogenic cultures in plants may be applied to *Pinus taeda*, *P. radiata*, and *Pseudotsuga menziesii* (col. 7). Thus, one of ordinary skill in the art would have been motivated to use lactose on *Pinus taeda*, *P. radiata*, and *Pseudotsuga menziesii*.

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From the teachings of the references, it is apparent that one of ordinary skill in the art would have had reasonable expectation of success in producing the claimed invention. Thus, the invention, as a whole, would be clearly *prima facie* obvious to one of ordinary skill in the art at the time the invention was made as evidenced by the cited references.

Conclusion

No claims are allowed. However, claim 43 is drawn to a method of reproducing conifers by somatic embryogenesis comprising growing *Pinus taeda* on nutrient medium comprising lactose and an additional sugar, an auxin, and a cytokinin to produced immature embryogenic culture, wherein the maturation medium does not contain auxin or cytokinin. Claim 43 appears to be free of the prior art. Claim 43 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action.

Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to June Hwu whose telephone number is (571) 272-0977. The Examiner can normally be reached Monday through Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Anne Marie Grunberg, can be reached on (571) 272-0975. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300.

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would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/June Hwu/

Primary Examiner, Art Unit 1661